REMARKS

Claims 1-23 are pending in the application. Claims 1-23 were rejected.

The specification has been amended to correct grammatical and typographical errors. For instance, page 2, line 20 has been amended as follows: "A conventional grammar ~~are~~ is limited in that it is typically difficult to consistently . . ." On page 6, lines 26 and 27, the term "accessibility" has been corrected spelling-wise. On page 7, the word "module" at line 6 has been replaced with the word "model"to be consistent with text in Fig. 2 of the patent application as originally filed. On page 15, the word "lexicon" was inadvertently left out before the reference numeral "66" at line 16. Thus, the word "lexicon" has been inserted at this location. Finally, on page 20 at line 18, the word "manager" was misspelled as "manger." This error has been corrected.

These amendments are of a clerical nature. No new matter is introduced. Applicants' therefore respectfully request that the Examiner enter these amendments.

The specification was objected to because the term "accessibility" was misspelled at page 6, lines 26-27. The specification has now been amended to correct the spelling. Acceptance is respectfully requested.

Claims 2, 3, 16, and 17 were rejected under 35 U.S.C. § 112, second paragraph, for lacking sufficient antecedant basis for the term "lexicon" in claims 2 and 16. The Examiner is correct in assuming that the limitation "lexicon" should be "a lexicon". Claims 2 and 16 have been amended accordingly; therefore, Applicants respectfully request that the § 112 rejections of these claims be withdrawn. Claims 3 and 17 have also been amended to make clear the reference to "said lexicon" introduced in each of claims 3 and 17. The rejections of these claims are thus believed to be overcome and should also be withdrawn.

Claims 1, 6, 8, 13, 15, 20, 22, and 23 were rejected under 35 U.S.C. § 102(e) as being anticipated by Phillips et al. (U.S. Pat. No. 6,519,562). Applicants' invention relates to a computer method for analyzing spoken utterances directed to speech enabled applications. The first step in the computer method involves defining a grammatic specification based on a domain model that is suitable for processing the spoken utterances. A conventional grammatic specification is shown in the specification as originally filed at page 14, line 13 (the Backus Naur

Form). According to Applicants' invention, a domain model is used to provide meaning to the conventional grammatic specification and form a modified grammatic specification. Such a modified grammatic specification is shown in the specification on page 15, lines 1-3. As shown on page 15, lines 1-3, the value of an attribute is defined by a range of values (attribute.range). Thus, the "attribute" of the grammatic specification has meaning.

Next, a recognition message, based on one of the spoken utterances recognized by a speech engine, is processed to produce an initial semantic representation of the recognized spoken utterance based on the grammatic specification and the domain model. An initial semantic representation is shown in frame structure form in the specification on page 16, lines 10-21. This initial semantic representation is then converted into a series of propositions, which are primarily attribute-object-value triples.

In contrast, Phillips et al. disclose a method and apparatus for automatically recognizing words of spoken speech using a speech recognition system. The speech recognition system generates one or more word strings each corresponding to a hypothesis of the speech and creates a probability value for each of the word strings. Word strings are then ordered by probability value. The system defines one or more dynamic semantic rules that specify how the probability value of a word string should be modified based on information about external conditions, facts, or the environment of the application in relation to the semantic values of that word string.

Unlike Phillips et al., which create one or more keyword-value pairs that represent semantic elements and semantic values of the semantic elements for the spoken speech, Applicants define a grammatic specification based on a domain model for a speech enabled application. Even though the keyword-value pairs in Phillips et al. represent elements of the grammatic specification, Phillips et al. do not give meaning to the grammatic specification through use of a domain model. In addition, Phillips et al. do not produce an initial semantic representation based on the grammatic specification. Instead, Phillips et al. "determine which words, from among a plurality of words, represent the semantics of the n-best word strings" (col. 5, lines 54-57).

Since Phillips et al. do not disclose every limitation of base claim 1 (i.e., "defining a grammatic specification . . . based on a domain model for a speech-enabled application" and "processing a recognition message . . . to produce an initial semantic representation . . . based on

the grammatic specification and the domain model"), Applicants respectfully request that the rejection of claim 1 be withdrawn. Independent claims 8, 15, 22 and 23 have similar limitations, therefore Applicants respectfully request that the rejection of these claims be withdrawn for at least the same reasons. Since claims 6, 13, and 20 depend from base claims 1, 8, and 15, respectively, Applicants respectfully request that the rejection of these claims be withdrawn as well.

Claims 2-5, 7, 9-12, 14, 16-19, and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Phillips et al., as applied to claims 1, 8, and 15, in view of Loatman et al. (U.S. Pat. No. 4,914,590).

As explained above, Phillips et al. do not disclose every limitation of base claims 1, 8, and 15. Loatman et al. do not add to Phillips et al. the defining of "a grammatic specification ... based on a domain model for a speech-enabled application" in contrast to the present invention of base claims 1, 8 and 15. Dependent claims 2-5, 7, 9-12, 14, 16-19, and 21 inherit these limitations and patentable distinctions of respective base claims 1, 8 and 15

Loatman et al. teach a natural language understanding (NLU) system referred to as PAKTUS (PRC adaptive knowledge-based text understanding system). This system is a hybrid system integrating syntactic and semantic NLU methods. The PAKTUS architecture is illustrated in Figure 1 of Loatman et al.

As shown in Figure 1 (Loatman et al.), an electronic stream of text 20 is input to a preprocessor 30 that decomposes the stream of characters into individual words, sentences and messages (40). "Words" are analyzed by referring to a lexicon 60 containing syntactic and semantic information about the "words". If PAKTUS does not recognize the words, it analyzes them morphologically (50).

If PAKTUS still fails to recognize the words, it determines the words' meaning from the current context, in the learning module 70. The learning module 70 supplies a guess and later verifies that guess by interacting with a dictionary officer 78 who has appropriate knowledge and understanding of the system lexicon 60 (col. 6, lines 29-34).

Next, module 80 parses the sentences syntactically according to a grammar specification 90 by identifying the subject, main verb, direct and indirect objects, etc. for each sentence and forms a syntactic structure 100 (col. 6, lines 35-42). The syntactic structure 100 is then

converted into "case frames" 120 that are language independent semantic structures representing a proposition about the world. The "case frames" are processed by a discourse analysis component 130 which applies domain knowledge templates 135 to integrate all the information of the message into conceptual structures 140 representing its meaning (col. 6, lines 57-62). These conceptual structures 140 are then passed to an application which acts according to the goals represented by the conceptual structures 140.

Therefore, Loatman et al. do not teach or suggest "defining a grammatic specification . . . based on a domain model for a speech-enabled application" as claimed in independent claims 1, 8, and 15. Consequently, no combination of Phillips et al. and Loatman et al. imply or suggest the present invention as claimed.

Moreover, Loatman et al. do not teach or suggest "receiving an ontological description of the domain model based on entities, classes, and attributes" as claimed in claims 2, 9, and 16. The entities, classes and attributes specified in Applicants' claims are different from the entities, classes, and attributes mentioned in Loatman et al. The "entities" claimed in Applicants' patent application as originally filed, refer to single individuals, physical objects, or abstract concepts. (see Specification page 10, line 26 to page 11, line 17). In contrast, Loatman et al. speak of entities having multiple parts (see col. 60, lines 54-63). The "classes" claimed in Applicants' patent application refer to sets of entities that share something in common (e.g., attributes or attribute values). In contrast, Loatman et al. speak of classes of "information related words" (col. 30, lines 36-52). Finally, Loatman et al. discuss an attribute which is defined as a "property that an object did not previously have (She made me happy) or that was not previously present in the discourse (She is happy)" (col. 53, lines 8-11). The attributes taught in Loatman et al. are somewhat similar to the attributes described in Applicant's invention, however, the attributes described in Applicants' patent application can be associated with more than one value (a range of values).

In addition, Loatman et al. do not disclose "combining the ontological description, a lexicon, and the syntax template to generate the grammatic specification" as claimed in now amended claims 2, 9, and 16. In Loatman et al., a domain model represented by an ontological description is not considered in forming a grammar specification. The domain model taught in Loatman et al. (the "Domain Knowledge Template" 135) is applied to case frames 105 to form

conceptual structures 140. Moreover, even though Loatman et al. teach the use of a lexicon, the lexicon is not explicitly used in forming the grammatic specification. Therefore, because Loatman et al. do not teach every claim limitation of claims 2, 9, and 16, Applicants respectfully request that the rejections of these claims be withdrawn. Because claims 3, 10, and 17 depend from claims 2, 9, and 16, respectively, Applicants respectfully request that the § 103 rejection of these claims also be withdrawn.

As described above, Loatman et al. do not teach an ontological description or ontological data structure based on entities, classes, and attributes as claimed in claims 4, 11, and 18. Therefore, Applicants respectfully request that the § 103 rejection of claims 4, 11, and 18 be withdrawn.

Loatman et al. do not teach a data model that "comprises a syntax specification and the grammatic specification and the grammatic specification is based on the syntax specification." Again, as described above, the grammatic specification of Loatman et al. is not based on a domain model or a syntax specification that is part of the domain model. Therefore, Applicants respectfully request that the § 103 rejection of claims 5, 12, and 19 be withdrawn.

Loatman et al. do teach the formation of the "case frames" from syntactically parsed sentences. However, Loatman et al. do not teach the creation of an initial semantic representation based on the grammatic specification which itself is based on a domain model. The case frames of Loatman et al. are created from syntactic structures formed by applying a grammar specification not based on a domain model. In Loatman et al., domain knowledge templates are applied to the "case frames" and not the grammatic specification as in Applicants' invention. Thus, Applicants respectfully request that the § 103 rejection of claims 7, 14, and 21 be withdrawn.

CONCLUSION

In view of the above amendments and remarks, it is believed that all pending claims (Claims 1-23) are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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